Final Report

AECOM

City of West Allis, Wisconsin Capacity, Management, Operations, and Maintenance (CMOM) Program Management Plan and Asset Management Program

Prepared by

City of West Allis
Department of Public Works
6300 West McGeoch Avenue
West Allis, Wisconsin 53219

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INTRODUCTION

In preparation of the impending Sanitary Sewer Overflow (SSO) rule and the Capacity, Management, Operations and Maintenance (CMOM) component of the proposed rule by the United States Environmental Protection Agency (USEPA) and the State of Wisconsin Department of Natural Resources (WDNR), the Milwaukee Metropolitan Sewerage District (MMSD) developed a CMOM Program for its wastewater collection system. The USEPA's proposed SSO regulation goal is to reduce health and environmental risks by reducing SSO occurrences. MMSD, recognizing the interdependency between its system and the satellite municipality systems for successfully meeting the USEPA SSO regulation goal, developed a regional CMOM approach and is cooperatively working with the 29 satellite municipalities to develop their CMOM Programs.

The Management Plan describes the means and methods the City of West Allis has in place to ensure complete execution of a CMOM Program. This is the general format of the Management Plan and is derived from the proposed USEPA SSO regulations. The municipal systems served by MMSD developed a Management Plan that will support CMOM Program development and implementation. Specifically, the City of West Allis Management Plan satisfies the following requirement of the Stipulation Agreement, signed with the State of Wisconsin in May 2002:

> *7.A. Management Plan.* A plan that outlines the goals of the CMOM, the organizational structure to manage it, the legal authority to control Infiltration and Inflow (I/I), design criteria, benchmarking data and performance measures to attain the goals. A significant effort associated with the Management Plan was the development of an asset management (AM) Program that provides for both programmed maintenance and tracking of the asset condition to enable early recognition of expansions or major rehabilitation necessary to avoid capacity limitations.

There are three objectives the Management Plan satisfies. First, it satisfies the requirements stated in the Stipulation Agreement. Second, it satisfies MMSD Rules & Regulations pertaining to CMOM Programs of all MMSD satellite municipalities. Third, it serves to achieve the larger CMOM Program goals that the City of West Allis has established.

2. DESCRIPTION OF THE CITY OF WEST ALLIS

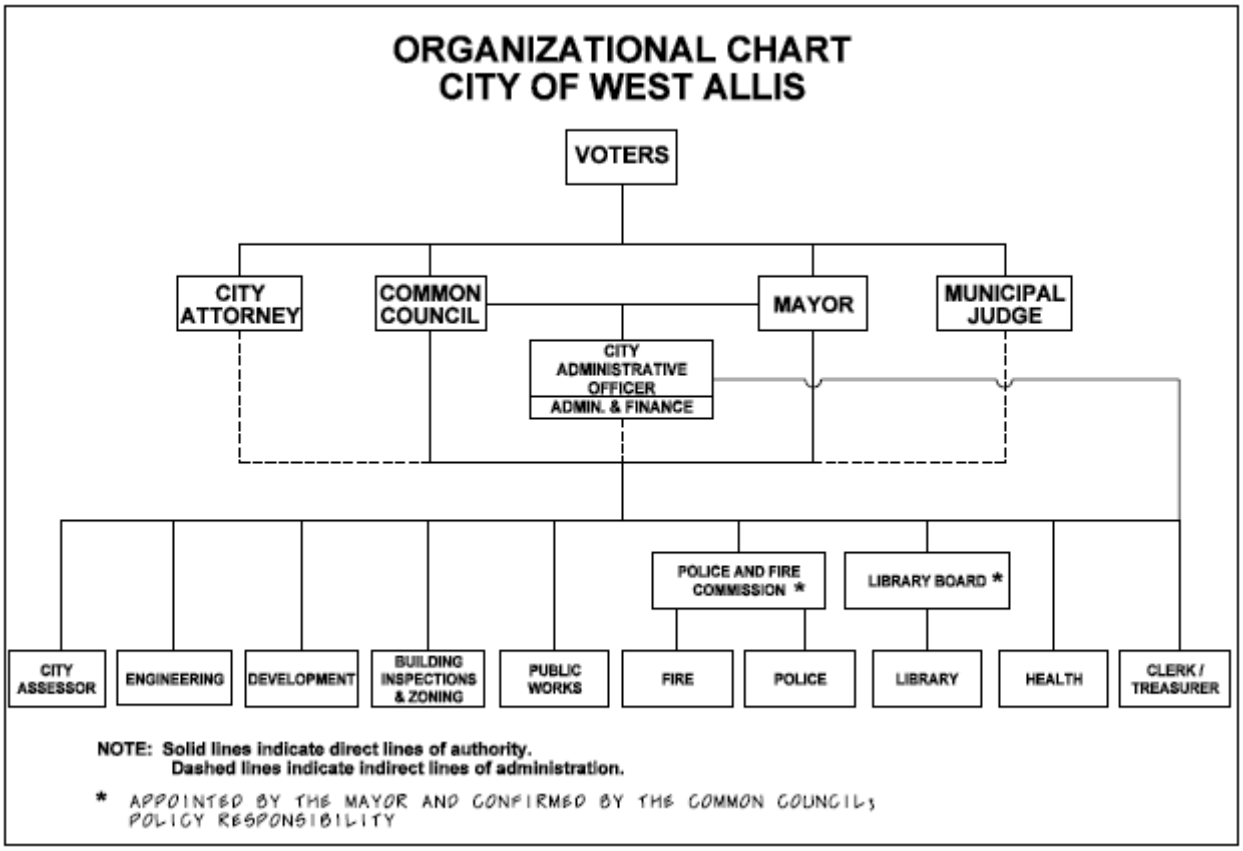

Figure 1. City of West Allis's Organizational Chart

The Public Works Department is principally responsible for the operation and maintenance of the sewer collection system. The Engineering Department assists the Public Works Department by monitoring, evaluating, and improving the sanitary sewer system for inflow/infiltration (I/I) reduction. The two departments also work together to ensure WDNR permit compliance as it applies to sanitary sewer overflows (SSOs).

Sewer services are funded by user rates that are based on operational and capital needs. The City of West Allis reviews budgets and rates annually, making adjustments as necessary to ensure adequate funding exists for the needs identified by staff. Presently the City plans for capital needs annually for storm and sanitary sewers, and five years into the future for street resurfacing during each budget/rate cycle. The annual budget for the Sanitary Sewer System is approximately $2.2 million.

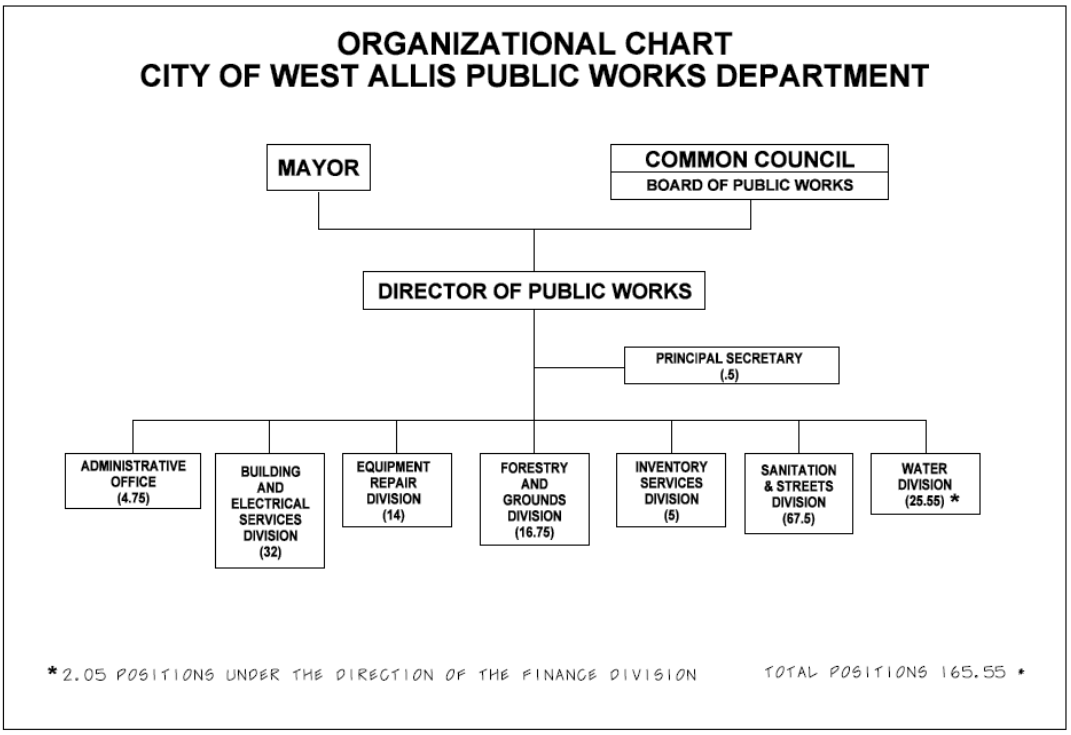

Figure 2. City of West Allis Public Works Department Organizational Chart

The Director of Public Works leads the Public Works Department. This position is supported by a principal secretary, an administrative office and six divisions including: Building and Electrical Services, Fleet Services, Forestry & Grounds, Inventory Services, Sanitation & Streets, and Water. The Public Works Department is responsible for sewer maintenance. There are a total of 150 full-time equivalent positions. Approximately 11 of these positions are related to the collection system.

Operation and maintenance activities are undertaken by personnel in the Sanitation and Streets Division within Public Works. Two crews are assigned the responsibility for cleaning sewers. The City is on a 14-16 month cycle for sewer cleaning. Closed circuit televising (CCTV) of sewers is contracted out with approximately 80,000 - 90,000 feet per year televised which represents about 10% of the City's sewers. West Allis also has its own camera that is used when the sewers are cleaned. The televising reports also contain a condition report of the manholes. The CCTV information, contained on discs, is reviewed by the Superintendent of Sanitation and Streets and the Engineering Department with repairs or rehabilitation prioritized. The listing of the CCTV discs is updated annually and is stored in a Microsoft Excel spreadsheet. Repairs are handled by means of a work order system and are prioritized relative to urgency, need and funding.

The City has a geographic informational system (GIS) database for its storm and sanitary sewer systems which includes inputs for pipe material, size, and year installed. The City is looking at adding maintenance information to the database. Currently, the maintenance system is a paper-based system.

West Allis has conducted flow-monitoring in conjunction with MMSD and temporary flow meters are / have been located throughout the City.

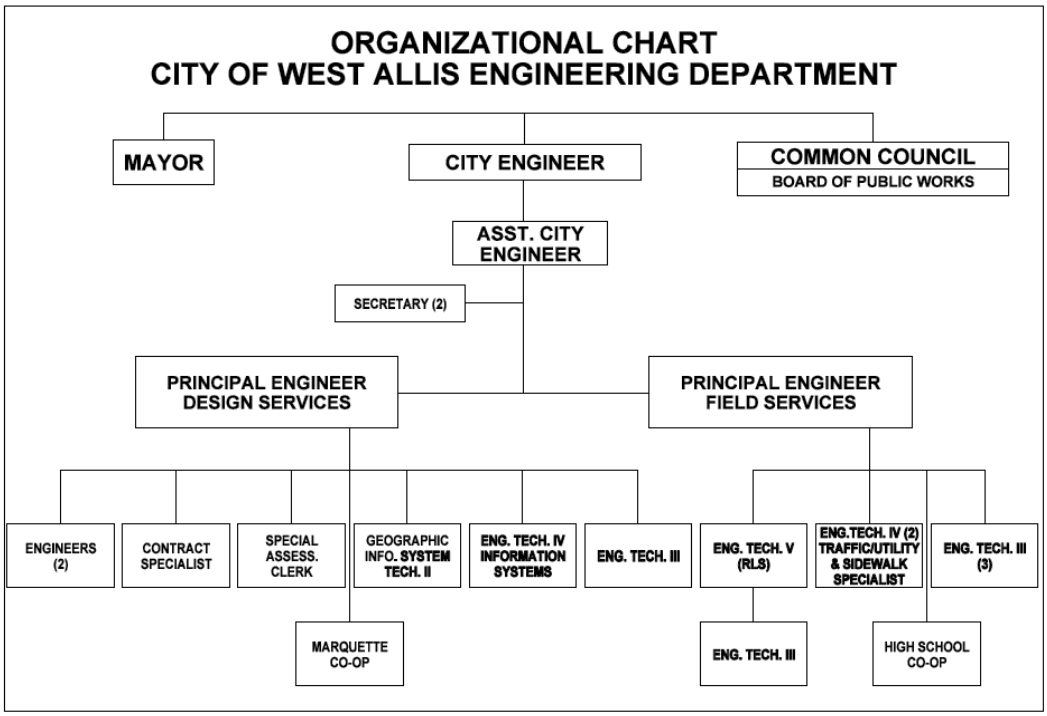

Figure 3. City of West Allis Engineering Department Organizational Chart

The Engineering Department is headed by the City Engineer who manages the Assistant City Engineer. A principal engineer for design services and a principal engineer for field services report to the City Engineer. These positions are supported by a staff of engineers and technicians including a special assessment clerk, information systems, and a traffic utility specialist. There are a total of 18 full-time equivalent positions.

Position descriptions exist for both the Engineering and Public Works Departments and are reviewed regularly and updated as necessary.

3. REGULATORY REQUIREMENTS FOR CMOM IMPLEMENTATION

In May 2002, MMSD entered into a stipulation agreement with the Wisconsin Department of Natural Resources (WDNR). Among other items, the Stipulation Agreement requires MMSD and satellite municipalities to implement a CMOM.

3.1 Stipulation Agreement References to CMOM

The Stipulation Agreement refers to CMOM in two locations: a section titled "Capacity, Management, Operation and Maintenance (CMOM) Program" which are items 6 and 7 of the agreement, and a section titled "Satellite Municipalities" which is item 9 of the agreement. These items are described in Appendix A.

3.2 CMOM Regulations Requirements for Management Plan

According to proposed federal and state regulations, this Management Plan addresses the following issues pertaining to wastewater conveyance in the separated sewer area of the City of West Allis:

i) Goals and objectives of CMOM

ii) Organizational structure to manage CMOM

iii) Legal authority required to control I/I

iv) Existing design criteria

v) Benchmarking data for utility performance

vi) Performance measures to attain CMOM goals

vii) Reporting methods for CMOM Compliance reviews

Each of these items is described in detail in this plan. In addition, this Management Plan for the City of West Allis contains a CMOM Program Summary.

4. GOALS OF THE CMOM PROGRAM

Goals and objectives for the City of West Allis CMOM Program have been established in order to provide justification for activities and proof of compliance. The program goals and objectives include those that are required by regulations or other legal constraints and those making the program consistent with other City of West Allis projects and programs. This Management Plan documents these goals in such a way that they are clear, lead to clear actions, and are measurable. Sections 4.1 through 4.3 present goals and objectives that have been developed by regulatory agencies and MMSD. The City of West Allis' goals and objectives are stated in Section 4.4.

4.1 Regulatory and Legal Considerations for Goals and Objectives

Regulatory considerations come from three key sources: the draft USEPA SSO regulations, the draft WDNR CMOM regulations, and the Stipulation Agreement.

- Regulatory compliance
- Schedule for completion
- SSO elimination
- CMOM Program definition, implementation, evaluation, and improvement
- Satellite municipality involvement

Specifically, the draft federal and state regulations express five general standards that indicate CMOM compliance for a wastewater utility:

- Properly manage, operate and maintain, at all times, all parts of collection system that the utility owns or over which the utility has operational control
- Provide adequate capacity to convey base flows and peak flows for all parts of the collection system the utility owns or has operational control
- Take all feasible steps to stop, and mitigate the impact of SSOs in portions of the collection system the utility owns or have operational control
- Provide notification to parties with a reasonable potential for exposure to pollutants associated with the overflow event
- Develop a written summary of the City's CMOM Program and make the program and its audit available to any member of the public upon request

These five general standards serve as a minimum set of objectives for the City of West Allis CMOM Program.

4.2 MMSD Wastewater Collection CMOM Program Goal

The goal statement for the collection system reflects MMSD desired outcomes that are either more specific than the regulations or better address local issues that threaten CMOM compliance. MMSD has stated their organization's CMOM goal as follows:

> In order to comply with federal and state regulations, by 2007, MMSD has implemented a CMOM Program with the intent of eliminating all SSOs except those caused by circumstances beyond the reasonable control of MMSD (as defined by CFR 122.42 (f)), and minimizing combined sewer overflows in accordance with the operating permit.

This CMOM goal statement was amended to MMSD Rules & Regulations, Chapter 3 on December 17, 2007. MMSD also developed objectives for achieving this goal as stated in Section 4.3.

4.3 MMSD's Objectives for CMOM Compliance

The following objectives were established by MMSD in its Management Plan strategy, published as a component of the CMOM Compliance Strategic Plan in June 2007. The City of West Allis also established CMOM Program Goals, Objectives, and Strategies in its Draft Strategic Plan, completed in November 2007. For each MMSD objective, the City of West Allis correlates the relevance between the MMSD objective and the City of West Allis' objective for their sanitary collection system.

> *"Establish an organizational structure which serves the goals of SSO elimination and CMOM compliance."* Achieving this objective will require dedicating and organizing human resources around activities that reduce SSOs. Leadership and group participation will be key features. The working members will need a mission and must be assigned group and individual responsibilities. This organization would ideally be linked or at least heavily coordinated with the organization and individuals involved in the Asset Management Program.

The City of West Allis has established an organizational structure, as indicated in Figures 1-3 for the management, operation and maintenance of the City's sanitary sewer collection system. The Director of Public Works and the City Engineer coordinate their efforts and communicate with the other departments of the City of West Allis, especially the Development, Building Inspections, and Zoning and Health Departments. The City of West Allis has established goals for their CMOM program which include SSO minimization and other items as included in Section 4.4:

> **"***Establish legal authorities in MMSD rules that address the flows in MMSD and satellite systems, including I/I and industrial discharges that may impact system operation."* Presently, MMSD uses the most recently adopted Facilities Plan to manage satellite municipality flows via a basin capacity allocation process which considers base and peak flows. The current process for administrating capacity is articulated in MMSD Rules & Regulations. This process will be under review during the ongoing 2020 Facilities Plan. It will be important for supporting strategies to recognize activities undertaken by municipalities to reduce I/I in their systems.

The City of West Allis is subject to WDNR standards and MMSD Rules and Regulations regarding the regulation of base and peak sewer flows, I/I, and construction standards. The WDNR has established regulations, incorporated into the Administrative Code of the State of Wisconsin, which regulate the construction, use and maintenance of public and private sewer systems. Most notably are:

- NR 110 – Sewerage Systems
- NR 120 – Priority Watershed and Priority Lake Program
- NR 151 – Runoff Management
- NR 152 – Model Ordinances for Construction Site Erosion Control and Post-Construction Storm Water Management
- NR 155 – Urban Nonpoint Source Water Pollution Abatement and Storm Water Management Grant Program
- NR 195 – River Protection Grants
- NR 210 – Sewage Treatment Works
- NR 216 – Storm Water Discharge Permits
- NR 328 – Shore Erosion Control Standards

Some of MMSD's rules and regulations, applicable to CMOM, are included in the following documents, which may be obtained from the MMSD's website:

- Infiltration and Inflow Control
- System of Main and Intercepting Sewers, Extensions and Sewer Area Boundaries

- Connecting to District Sewers
- Approval of Sewer Plans
- Miscellaneous Provisions Applicable to Sewer Construction
- Inspection of Sewer and Drainage Construction
- Basic Data for Sewer Design
- Connections to Sanitary Sewers from Private Sewage Disposal Systems
- Disposal of Septic Tank and Holding Tank Wastes
- Surface Water and Storm Water Rules Guidance Manual.

In addition to the WDNR and MMSD requirements, the City of West Allis has a Sewer Use Ordinance and Plumbing Code which supersede the requirements of the WDNR and MMSD. The City also has the rights to operate and maintain right-of-way and easements within the City. This ordinance, rights-of-way and easements and their enforcement, give the City of West Allis the authority and jurisdiction to regulate, monitor, service and maintain the storm and sanitary sewers within the limits of the City.

> *"Establish practices that serve to improve system performance, avoid preventable failures, and prioritize CMOM compliance activities."* This objective is critical to achieving regulatory compliance with CMOM. As additional support MMSD has established a Rapid Response team to review emerging situations in the system that could lead to sewer overflows and take action to prevent them. Already MMSD has or will be implementing strategies that certify standards for design, construction, operations, and maintenance; take employee and customer input on the CMOM Program; establish organizational performance measures; and assist satellite municipalities with CMOM compliance activities.

The Engineering Department reviews capacity in its sewersheds. The City works with MMSD on its capacity criteria for redevelopment. Under normal situations, typical per capita and diurnal flow rates are used to determine design flows and the system is sized accordingly. In problem areas, flows are estimated from observed surcharges or using coefficients derived from sewershed flows as shown in MMSD's facilities plan.

Information obtained from televising and manhole inspections is reviewed by both the Public Works Sanitation and Street Division and the Engineering Department. Necessary actions and repairs of structural deficiencies are prioritized based on the severity of the problem and whether or not it needs immediate attention. There is a standard operating procedure for addressing Sanitary Sewer Breaks.

> *"Lower overall cost of wastewater collection system asset ownership while achieving defined service levels."* This objective deals directly with a critical Asset Management concept. To achieve the objective, MMSD will need to follow the steps related to establishing Asset Management as a core business practice. These steps include defining current activities, benchmarking them against industry best practices, identifying priority areas for improvement, and establishing a plan for implementing Asset Management. This process will both lower the cost of asset ownership and help to better define service levels for the systems MMSD owns and operates.

As part of the City's Draft CMOM Strategic Plan (November 2007), the City identified the following objectives and strategies to minimize the occurrence of overflows for their sanitary sewer collection system:

Those objectives and strategies are listed in the Draft CMOM Strategic Plan.

The City of West Allis has initiated the CMOM Program process and is familiar with the processes that measure performance. As part of the City's Draft Strategic Plan (November 2007), the City included the following objectives as part of their Communication and Audit Plan:

1. Facilitate internal reporting on CMOM Program progress to employees.

2. Provide information on CMOM Program progress to stakeholders and Solicit suggestions and obtain stakeholder input.

3. Report on short-term, long-term, and cyclical CMOM Program actions.

4. Coordinate with other municipality and MMSD communications initiatives.

5. Satisfy CMOM regulatory requirements for program communications, including any requirements of the Satellite Stipulation.

6. Allow for periodic review and changing of CMOM Program according to input and benchmarking data.

7. Establish processes for changing the CMOM Program according to results of periodic review with respect to performance measures.

8. Reflect CMOM implementation status within the audit process.

9. Provide data to the Communication Plan regarding plan changes in order to demonstrate that the CMOM Program is being regularly updated.

4.4 City of West Allis Goals and Objectives for CMOM Program

The municipality-specific goals and objectives developed by the Department of Public Works and the Engineering Department for the City of West Allis are listed below:

- Comply with the conditions of the WPDES permit
- Minimize the occurrence of overflows
- Improve or maintain system reliability
- Reduce the potential threat to human health from sewer overflows
- Provide adequate capacity to convey allowable peak flow
- Manage infiltration and inflow
- Protect collection system worker health and safety
- Operate a continuous CMOM Program

The Draft CMOM Strategic Plan (Chapter 2) provides the objectives and strategies for achieving these goals.

5. ORGANIZATIONAL STRUCTURE TO MANAGE CMOM

A fully implemented CMOM Program will require participation at all levels of the organization. The amount of involvement will range from individuals dedicated to the program to those that are only peripherally or occasionally involved. The strategy for satisfying this stipulation objective considers whether the existing City of West Allis organizational structure is conducive to achieving CMOM compliance, and if not, what changes are warranted for effective deployment of CMOM. Measures of compliance will evaluate whether administrative, management, and operations and maintenance staff are clearly identified, and whether lines of authority and chains of communication are delineated for planned and unplanned (emergency) events.

If maintenance activities are performed by contract, the contractor shall provide departmental organization charts that describe the functional nature of the organization.

Strategies to establish an organizational structure which serves the goals of SSO elimination and the CMOM compliance include:

- Assign CMOM Program Management responsibilities for overseeing the CMOM Program. Responsibilities include managing assigned staff, providing technical advice and guidance related to sewer projects, and reviewing program standards and specifications to ensure compliance with established regulatory requirements.
- Establish a CMOM work team consisting of key personnel in the Department of Public Works and Engineering Departments.
- Assign the CMOM work team the task of reviewing the CMOM responsibility in each Department on a periodic basis.
- Utilize the City of West Allis Mission Statement for CMOM, and its CMOM work team, that describes how it will sustain the CMOM Program for the City of West Allis and coordinate with MMSD. The City of West Allis CMOM Mission Statement is as follows:

The City of West Allis' CMOM Mission Statement, as included in the Draft CMOM Strategic Plan (November 2007) is as follows:

"To efficiently collect and convey all of our customers' wastewater in the most cost-effective manner while remaining in compliance with WPDES permits, Clean Water Act, Wisconsin Law, and MMSD Rules and Regulations."

Each of these strategies is discussed in the following sections. The City of West Allis Department of Public Works organization chart is presented in Figure 2.

5.1 CMOM Program Management Responsibility

The City of West Allis has fulfilled the requirements for CMOM organizational structure by utilizing existing staff and redefining job responsibilities accordingly. Specifically, the Director of Public Works will serve as CMOM Program Manager.

The full duties of the CMOM Program manager include:

- Oversee and direct the activities of the City's CMOM Program.
- Prepare all reports required of the Program.
- Serve as custodian for all reports and records associated with the Program.

5.2 CMOM Program Work Team

Additional CMOM responsibilities are assigned as follows:

- Sewer System Operations: The Sanitation and Street Superintendent is responsible for daily operation of the sanitary sewer system.
- Sewer System Maintenance: The Sanitation and Street Superintendent is responsible for daily planned and corrective sanitary sewer system maintenance activities.
- Sewer System Capacity Assessment: The City Engineer is responsible for tracking the capacity of the sanitary sewer system relative to actual and planned base and peak flows.
- Sewer System Condition Assessment: The City Engineer is responsible for assessing the condition of the sanitary sewer system assets, including the I/I reduction program.

Figures 2 and 3 present the organizational structure for each of these departments that contain these staff members. Each of these major areas of responsibility are supported by other activities and personnel within their respective departments. Staff from City departments are sometimes interchanged to provide additional support, when required.

6. LEGAL AUTHORITY TO CONTROL I/I

Legal authorities established by the City of West Allis that address collection system flows, including I/I and industrial discharges that may impact system operation, include the following:

- The City of West Allis Plumbing Code
- The City of West Allis Sewer Use Ordinance

Additionally, the MMSD legal authorities concerning I/I control are provided through its Rules & Regulations - Chapter 3, "Infiltration and Inflow Control." The MMSD Rules & Regulations address I/I control, construction standards, satellite collection systems, and other issues that relate to its mission. MMSD regulations seek to: Conserve sewerage system capacity; establish a continuing duty for users of the sewerage system and governmental units to minimize I/I; reduce the exposure of the public to pathogens carried by wastewater; and minimize the probability, duration and magnitude of overflows. Within these rules, the MMSD imposes no quantitative limits on I/I for existing sewer service areas.

7. DESIGN CRITERIA

The City of West Allis has established design criteria for sewer facility construction in its service area through the Standard Specifications for Sewer and Water Construction in Wisconsin, Sixth Edition, December 22, 2003 with Addendum No. 1 (December 22, 2004) and Addendum No. 2 (April 22, 2008). MMSD has developed additional design criteria presented in Chapter 2, "Planning, Design, and Construction of Sewers and Ancillary Facilities," of the Rules & Regulations. These MMSD Rules pertain to "any person or governmental unit who is planning, designing, or constructing a sewer or ancillary facility within the MMSD's planning area." Specifically, the rules describe requirements for sewer system and construction plans, construction activity, direct connections to MMSD interceptor sewers, and design requirements for constructing sewers in the MMSD service area.

The City of West Allis has established practices that serve to improve system performance, avoid preventable failures, and prioritize CMOM compliance activities.

8. CMOM PROGRAM SUMMARY

This section describes the City of West Allis' CMOM Program in summary. The descriptions provided are in addition to previous sections on CMOM Program Goals, Organizational Structure to Support CMOM, and Legal Authorities.

8.1 Sanitary or Combined Sewer Overflow Response and Reporting

The City of West Allis currently has a Standard Operating Procedure (SOP) that addresses flood control and responses to both sanitary and storm sewer concerns. These SOP's will be reviewed and incorporated into the Overflow Response Plan (ORP).

The chain of communication utilized by the City of West Allis, as described in the Draft CMOM Strategic Plan, is as follows:

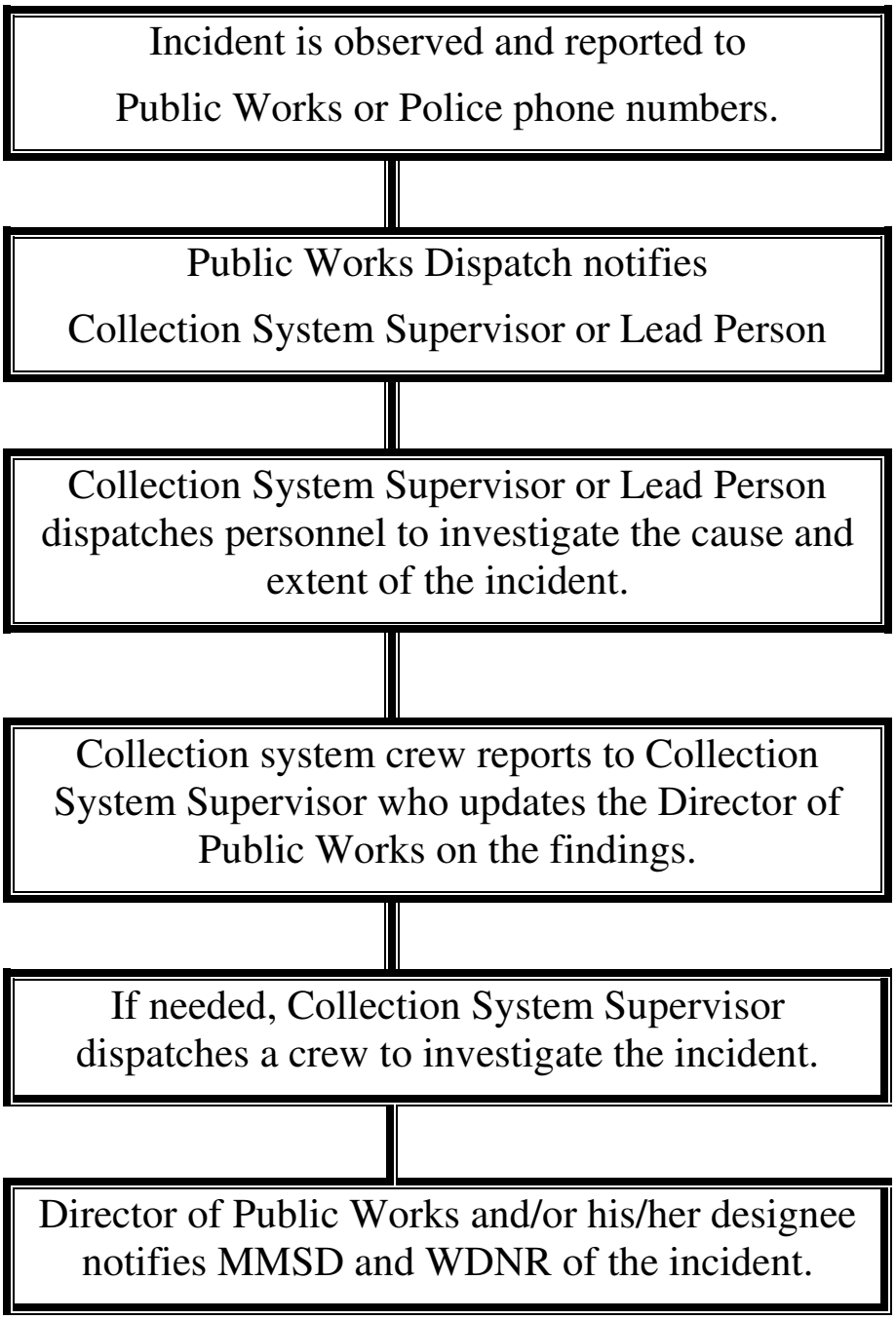

Figure 4. Existing Response Procedures in Event of an Overflow

The City has addressed the High Priority areas as identified in the Draft CMOM Strategic Plan (November 2007) of:

Technical Support Function – Contingency Planning	Planning Process - Emergency Flow Control
Technical Support Function – Contingency Planning	Planning Process - Emergency Operations and Maintenance

as part of the ORP. These areas have been addressed by reviewing and evaluating the current City SOP's and incorporating additional procedures and policies as required to achieve a High Defined level. A High Defined Level is defined as a defined repeatable approach that is documented and communicated within the organization. See Table 1 for the criteria for evaluating CMOM Business Practices.

Table 1. Criteria for Evaluating CMOM Business Practices

Attribute	Step	Subcategory	Description
Optimizing	**10** **9** **8**	High Medium Low	Continual improvement, refinement of processes, standards and procedures
Managed	**7** **6** **5**	High Medium Low	Quantitative measurements are defined for processes and quality standards
Defined Approach	***4*** **3**	***High*** Low	Defined repeatable approach that is documented and communicated within the organization
Initial	**2**		Reactionary and without a systematic approach
Unaware	**1**		Total unawareness within the organization

Note: High-Medium-Low in the Goal column refers to Attribute, and is completely independent of Priority.

Other gap areas, as defined in the Draft CMOM Strategic Plan, that will be addressed are as follows:

Priority	Service Area	Business Process Area	Description of Issue	Strategy to Address Issue	Current Status	Goal
Medium	Technical Support Function – Information Management	Overflow Reporting, Notification, and Record Keeping - Affected Agencies and Public	Need to formalize and expand to meet draft CMOM requirements.	City of West Allis to prepare an annual overflow report summary and make it available to the public.	Low Defined	High Defined

These areas have been addressed by drafting templates for and preparing each of these respective reports, as part of the ORP, on a monthly or annual basis as required.

8.2 Maintenance Facilities and Equipment

The Draft CMOM Strategic Plan identified the following gap issue that was closed as part of the ORP. The policy and procedure for addressing problem areas was determined, documented and implemented. These policies and procedures will be evaluated and assessed as part of the CMOM Auditing process.

Priority	Service Area	Business Process Area	Description of Issue	Strategy to Address Issue	Current Status	Goal
Low	Policy – Strategic Goals for Work Management	Prioritization	The City has a problem area list and general maintenance approach that involves some prioritization. Needs written documentation.	City of West Allis will develop a documented prioritization policy and procedure for the problem area list.	Low Defined	High Defined

8.3 Collection System Mapping

According to a review of the City of West Allis's system, the City owns over 950,000 feet of sanitary sewer collection system mains and interceptors. The most critical elements of the gravity system are shallow manholes and pipes at elevations very close to those of nearby basements. The City does not own or operate any sanitary lift stations and has only one (1) SSO diversion location, at 70th Street and West Burnham Street. The City does not own or operate any sanitary siphons, storage tanks or overflow gates.

The City's storm and sanitary sewers are currently mapped in their geographic informational system (GIS). This information is distributed internally and externally through the City's GIS website. The mapping is used for CIP development and system maintenance and the City has achieved a High Defined level for their system mapping, as defined in the Draft CMOM Strategic Plan.

8.4 CMOM Information Management

At some point in the future, the City may determine that establishing I/I limits for areas within its system are necessary to prevent local system SSOs, basement backups, or restrictions to growth. In such a case, the City will develop an ongoing program to detect and reduce excessive I/I levels in its system. Currently, the City of West Allis does not have any areas of concern for SSO's, yet plans to develop an I/I reduction program to understand the current level of I/I in the system and to establish a program to reduce I/I in situations where I/I results in service problems. The City has utilized flow monitoring of the collection system in conjunction with MMSD to assist in the operation of the various components of the system. The City also uses flow data for analyzing system performance, including the sizing of conveyance system facilities. The City plans to implement and utilize forms, GIS and database updates on a routine basis to maintain and upkeep the recorded information on the sanitary sewer collection system.

Priority	Service Area	Business Process Area	Description of Issue	Strategy to Address Issue	Current Status	Goal
Medium	Technical Support Function – Information Management	Information Management - Maintenance	Informal system is in place. The City will be implementing forms in the future.	City of West Allis to maintain records monthly and have a field supervisor review all maintenance records.	Low Defined	High Defined
Medium	Technical Support Function – Information Management	Information Management - Operations	Informal system is in place. The City will be implementing forms in the future.	City of West Allis to maintain records monthly and have a field supervisor review all operation records.	Low Defined	High Defined

8.5 Collection System Preventive Operation and Maintenance Activities

The City of West Allis, located in Milwaukee County, is a satellite municipality served by MMSD through 93 Metropolitan Interceptor System (MIS) connections, 64 of which are 12" and larger. The City serves approximately 61,000 people through its collection system consisting of approximately 950,000 linear feet (180 linear miles) of 8- to 30-inch diameter sanitary sewers. The Public Works Department is responsible for sewer maintenance. Maintenance is conducted through the Streets and Sanitation Division. Sewer televising is contracted out and approximately 90,000 feet per year (approximately 10% of the system) is televised, meaning that the entire City is televised every 10 years). The City also has procedures for conducting smoke testing and dyed water flooding when required. The City inspects all manholes on a routine basis and documents the findings on forms. The televising report also aids in the manhole inspection process. The City does not have a history of corrosion problems.

The City has a geographic informational system (GIS) database for its storm and sanitary sewer systems which includes inputs for pipe material size and year installed. The City is looking at adding maintenance information to the database. Currently, the maintenance system is a paper-based system. The City performs maintenance on the sanitary sewer collection system when warranted due to concerns addressed through

visual verification from televising, manhole inspections, basement backups, SSO's and other means. The City does not own or operate any pump stations.

The City has standard maintenance and operating procedures for the completion of their scheduled maintenance activities. The City has achieved a High Defined level for their preventative O&M activities, as defined in the Draft CMOM Strategic Plan.

8.6 System Evaluation and Capacity Assurance Planning (SECAP)

The City of West Allis intends to review the findings of MMSD's Limited SECAP to gain an understanding of the current system's ability to convey peak flows and what steps are necessary to address system capacity inadequacies. The City does not have a comprehensive model of their entire collection system, and plans to understand the current level of I/I in the system and establish a program to reduce I/I in situations where I/I results in service problems. There are no current areas of I/I concern within the sanitary collection system and the City's only long term scheduled Capital Improvement Program (CIP) projects involve maintenance, repair and replacement of the collection system, as identified by the routine televising. Currently, the City's CIP program is budgeted at $2,199,750 annually, based on 2009 figures.

8.7 Collection System Structural Deficiencies Action Plan

Currently, the City's maintenance system is a paper-based system. The City performs maintenance on the sanitary sewer collection system when warranted due to concerns addressed through visual verification from televising, manhole inspections, basement backups, SSO's and other means. There are no known structural deficiencies currently and the City addresses each structural deficiency when identified. There is no current need for a prioritization determination. The City is at a High Defined level, per the Draft CMOM Strategic Plan, for items regarding collection system structural deficiencies.

8.8 Collection System Personnel Training

The Overflow Response Plan (ORP) identifies specific training activities that will be required of key individuals responsible for aspects of the collection system. The City has completed preparedness training and sent all applicable managers to a specialized preparedness training course, NIMS – National Incident Management System. The City of West Allis requires initial and refresher technical training to employees and the City sends employees to conferences and seminars for additional training and to maintain current technical understanding. The City is at a High Defined level, per the Draft CMOM Strategic Plan, for items regarding collection system personnel training.

8.9 Critical Equipment and Replacement Parts Inventory

The City of West Allis has a computerized inventory of their equipment and spare parts, including location, date of purchase, number of hours of use, lifetime and warranty information and expected replacement date. This information is extremely useful and very adequate for responding to emergency conditions. The City of West Allis has achieved a Low Managed level for tools, spare parts and supplies, per the Draft CMOM Strategic Plan.

8.10 Sewer System Component Installation, Rehabilitation and Repair Requirements and Standards

The City of West Allis has established design criteria for sewer facility construction in its service area through the Standard Specifications for Sewer and Water Construction in Wisconsin, Sixth Edition, December 22, 2003 with Addendum No. 1 (December 22, 2004) and Addendum No. 2 (April 22, 2008). The City reviews and approves all sewer extension and rehabilitation plans prior to their construction.

System inspection reports and tapes are reviewed and tied to the City's Capital Improvements Program (CIP). The City of West Allis has achieved a Low Managed level for installation, rehabilitation and repair requirements and standards, per the Draft CMOM Strategic Plan.

8.11 Sewer System Component Installation, Rehabilitation and Repair Inspection and Testing Provisions

The City has dedicated inspection staff for every construction project with documented records and requires testing of their collection system improvements per the Standard Specifications for Sewer and Water Construction in Wisconsin. The City of West Allis has achieved a Low Managed level for installation, rehabilitation and repair requirements and standards, per the Draft CMOM Strategic Plan.

8.12 Public Outreach Efforts

The Communication Plan (CP) articulates the process for reporting to various stakeholders the implementation activities and performance of the CMOM Program. This plan states the objectives for communications and describes a set of complementary strategies for achieving those objectives. Performance measures for communications strategy implementation are also provided in the plan.

The recommended objectives of the CP have been achieved as follows:

- Facilitate internal reporting on CMOM Program progress to employees;
- Provide information on CMOM Program progress to stakeholders;
- Report on short-term, long-term, and cyclical CMOM Program actions;
- Coordinate with other municipality and MMSD communications initiatives; and,
- Satisfy CMOM regulatory requirements for program communications, including any requirements of the Satellite Stipulation.

The City of West Allis has developed a CP, assigned staff responsibilities, and will provide and schedule CMOM briefings to regulators (WDNR and MMSD) as well as the City Common Council, Engineering Department, Public Works Department and Health Department. The information will also be available to the general public through the City's website.

9. PERFORMANCE MEASURES TO DETERMINE GOAL ATTAINMENT

A critical aspect of CMOM implementation is establishing performance measures that are aligned with the goals and objectives of the program. Properly worded goals can be supported by measurable objectives, with each objective constructed so that performance measures can be linked to them.

The CMOM Compliance Strategy proposed in this document states that for each goal, objective, and strategy, a sufficient number of performance measures should be tracked by the City of West Allis in order to establish progress toward achieving the stated program goal. This section outlines the process followed for identifying the performance measures, including any sources of potential benchmarking data (discussed further in Section 10.0).

Performance measures fit into a category of organization commonly referred to as "benchmarking." Benchmarking enables an agency to conduct internal assessments of its programs, compare with other similar agencies, and attempt to answer questions such as:

- Where are we now?
- Where do we want to go?
- How are we going to get there?, and
- When are we going to get there?

Performance measures support the benchmarking process by describing the performance of the system and programs based on measurable data. The City of West Allis performance measures for the CMOM Program were selected based on the following criteria:

- The measure supports tracking progress toward achieving CMOM goals and objectives
- Data are readily available
- Data are useful for internal trending
- Data are useful for comparison to an external industry standard or data from similar organizations

9.1 City of West Allis CMOM Program Performance Measures

Table 9-1 lists performance measures that have been established for the CMOM Program.

Table 9-1. CMOM Program Performance Measures

Program Element	Performance Criteria/Standard	Benefit
Practices		
Preventive Maintenance Cyclic Sewer Cleaning CCTV Inspection Manhole Inspections Pump Station Inspections (Diversion Pump Station)	 Length performed annually Length performed annually Number inspected Frequency Performed	Establishes municipality's dedication to system maintenance through setting annual goals. Some utilities will justify needed PM expenses through this requirement
I/I Reduction Program SSES Rainwater Compliance Inspection Disconnect Clearwater Sources Number of Manholes Repaired Length of Sewer Repaired or Replaced	 Description of activities performed Description of activities performed Number disconnected Number repaired Length repaired	Provides integration with current Chapter 2 requirements for I/I control plan updates.
System Map	Data verified, QA/QC implemented, all facilities mapped and inventoried (completeness, accuracy and availability)	Ensures accurate inventory of sewer collection assets and is fundamental to subsequent asset management activities.
Skills and Safety Training	Certification/skills training identified, tracked, provided, and updated for applicable personnel	Ensures and documents sewer worker safety training activities.
Capacity Evaluation	Evaluation completed in priority basins as necessary for development of 2020 Facilities Plan alternatives analysis and level of service evaluations.	Identifies system at risk of surcharge from MMSD system. Identifies potential impact on MMSD system if municipality attempts to reduce I/I or construct relief capacity to eliminate overflows.
Information Management System	Periodically updated and set-up according to MMSD Standards	Makes data collection more consistent and retrieval more cost-effective for the municipality.
Documents		
Annual sewer financial reports	Document produced annually.	Establishes linkage between financial needs and funding.
Annual CMOM Status Reports Organizational Chart Design and Inspection Standards	Document produced annually. Document produced and updated as necessary. Confirm MMSD and State of Wisconsin standards in place	Would eventually satisfy state requirements for CMOM Program summary. Provides documentation of roles and responsibilities for CMOM activities. Provides clearer communication to designers and contractors on sewer construction projects.
System Evaluation and Capacity Assurance (SECAP)	Document produced if required.	Establishes that municipality has evaluated potential linkage between system flows, system capacity, and overflows.
Standard Operating Procedures CCTV and manhole inspection	 Document produced and updated as	 Provides for clear training of new

Table 9-1. CMOM Program Performance Measures

Program Element	Performance Criteria/Standard	Benefit
	necessary, according to approved standard.	staff and communicates to public that standards exist and are followed for these activities.
Cleaning	Document produced and updated as necessary.	
Inspections (structures, pump stations)	Document produced and updated as necessary.	
Overflow Response Plan (ORP)	Document produced and updated as necessary.	Provides for consistent training of new staff, communicates to public that an updated plan exists and is followed when responding to system overflows.
Capital Improvements Plan	Major rehabilitation identified on 5-year planning horizon. Summary document produced and updated as necessary.	Provides for better financial decision-making as it looks more than one or two years into the future.
Condition Assessment	Inspection results reviewed, defects identified and prioritized, repair/rehabilitation projects identified and incorporated into Capital Improvements Plan.	Ensures that inspection findings are assigned a priority and scheduled for correction.
Legal Authority	Appropriate ordinances identified and adopted.	Clearly communicates the responsibilities of property owners with respect to eliminating sources of clear water from the sewer system.

10. BENCHMARKING DATA

This topic of the Stipulation Agreement involves comparing the City of West Allis to other similar municipalities with respect to utility performance. The following data will be collected and validated by the Director of the Department of Public Works.

- Number of Sanitary Sewer Overflows
- Number of Lateral Collapses (note that the lateral is owned by the property owner up to and including the connection to the mainline sanitary sewer)
- Number of Emergency Bypasses
- Number of Customer Complaints

Benchmarking data will be evaluated on an annual basis. Comparisons will be made with the Cities of Wauwatosa, New Berlin and the Village of West Milwaukee. Due to the differing experience, capabilities, resources, sizes and status of each municipality in regards to CMOM, some communities will be further optimized than others and it is unreasonable to make assumptions that there is a standard to be set across communities for their progress in the closure of gaps. Rather, a unified effort between communities to develop / increase relationships, and to standardize operating and maintenance procedures should be implemented. This is one of the items that the Technical Advisory Team (TAT) has addressed through their development of SOP's for the sanitary sewer system. Communities can assist each other to address the gaps in the benchmarking data, but the individual gaps for each community are their responsibility to address. For the City of West Allis, gaps identified in benchmarking data will be addressed by the CMOM work team.

11. REPORTING METHODS FOR CMOM COMPLIANCE REVIEWS

Draft federal and state regulations would require annual compliance reporting for CMOM Programs. Given Wisconsin's delegated authority, only annual reporting to WDNR would be required. This annual reporting includes the completion of an eCMAR (Compliance Maintenance Annual Report) through the WDNR and MMSD. MMSD has also developed an I/I Management annual report template that would satisfy the annual reporting requirements as per MMSD Rules. Appendix B includes the most recent report submitted by the City of West Allis to MMSD. The same report is submitted to WDNR.

Appendix A

Stipulation Agreement References to CMOM

CAPACITY, MANAGEMENT, OPERATION AND MAINTENANCE (CMOM) PROGRAM

6. Combined sewer overflows and sanitary sewer overflows present important concerns for public health and the environment. The State, through the Department of Natural Resources, acknowledges that the District has accomplished significant reductions in the number of overflows experienced within the District's Metropolitan Interceptor Sewer System through implementation of the Water Pollution Abatement Program (WPAP).

7. While sanitary sewer overflows in the District's system have been significantly reduced, there are still sanitary sewer overflows within the District's and its satellite municipalities' sanitary sewer systems. To continue the District's program to reduce with the goal of eliminating all non-permitted sanitary sewer overflows, the District shall implement a regional Capacity, Management, Operation and Maintenance (CMOM) program. The regional CMOM shall be comprised of four integrated components:

   A. *Management Plan.* A plan that outlines the goals of the CMOM, the organizational structure to manage it, the legal authority to control I/I, design criteria, benchmarking data and performance measures to attain the goals. A significant effort associated with the management plan shall be the development of an asset management program that provides for both programmed maintenance and tracking of the asset condition to enable early recognition of expansions or major rehabilitation necessary to avoid capacity limitations.

   B. *Overflow Response Plan.* An overflow response plan that identifies measure to protect public health and the environment. This plan will outline the public notification, permit reporting, measuring and monitoring steps to be taken during an overflow event.

   C. *System Evaluation and Capacity Assurance Plan.* A plan for system evaluation and capacity assurance for peak flow conditions. This plan shall identify necessary capital improvements to meet the projected flows and an implementation plan that describes timing and responsibilities for implementing each capital improvement.

   D. *Communication and Program Audit Plan.* On a regular basis the District shall report to the Department on the implementation and performance of the CMOM program. The communication and program audit plan shall allow for public input during the development and implementation of the CMOM.

   E. The approach to be used by the District to initiate and maintain the CMOM program shall include the following steps.

      1) Retention of a consultant by no later than December 31, 2002, to provide program oversight and guidance.

      2) Review of existing operations and existing management and capital improvement plans.

      3) Development of an action plan to assess the required changes to existing plans and to develop a critical plan approach to a CMOM program.

      4) Concurrent with previous steps, review of existing information on asset management, including field verification as required, and software development to provide a simplifies data base to manage the capital assets of the District.

      5) Open and maintain a CMOM dialog with the 28 satellite municipalities through the Technical Advisory Team[1] with the goal of assisting the satellite municipalities with developing individual CMOM programs. The District shall develop prospective measures for the satellite systems that will reflects the requirements of the District's regional CMOM program.

      6) This entire CMOM initiative will be coordinated with the ongoing facilities planning and shall be completed by no later than June 30, 2007 and documented in the 2020 Facilities Plan to ensure future oversight of this program.

[1] The Technical Advisory Team (TAT) is a group organized by the District and is composed of members of the District's engineering staff, engineering staff from each of the 28 satellite municipalities, the Department, and the Southeastern Wisconsin Regional Planning Commission.

SATELLITE MUNICIPALITIES

9. Infiltration and inflow reduction efforts by the 28 satellite municipalities will continue to be required under District Rules, Chapter 3, Infiltration and Inflow Control. In addition, each satellite municipality shall be required, by District rules, to develop a local CMOM by no later than two years after completion of the District's regional CMOM Program. Prior to promulgation of the District rules, the Department may issue WPDES discharge permits to individual satellite municipalities, as necessary to require, inter alia, I/I reduction efforts by fixed dates. Following promulgation of the District rules, the Department may issue WPDES discharge permits to individual satellite municipalities, as necessary to require, inter alia, CMOM development and I/I reduction efforts by fixed dates.

Appendix B

Year 2009

Annual CMOM Program Status Report

From

City of West Allis

to

MMSD / WDNR

COMPLIANCE MAINTENANCE ANNUAL REPORT

Facility Name:	Last Updated:	Reporting Year:

Financial Management

	Questions	Points
1.	Person Providing This Financial Information	
	Name: Telephone: E-Mail Address(optional):	
2.	Are User Charge or other Revenues sufficient to cover O&M Expenses for your wastewater treatment plant AND/OR collection system ?	
	○ Yes (0 points) ○ No (40 points) If No, please explain:	
3.	When was the User Charge System or other revenue source(s) last reviewed and/or revised? Year:	
	○ 0-2 years ago (0 points) ○ 3 or more years ago (20 points) ○ Not Applicable (Private Facility)	
4.	Did you have a special account (e.g., CWFP required segregated Replacement Fund, etc.) or financial resources available for repairing or replacing equipment for your wastewater treatment plant and/or collection system?	
	○ Yes ○ No (40 points)	
	REPLACEMENT FUNDS(PUBLIC MUNICIPAL FACILITIES SHALL COMPLETE QUESTION 5)	
5.	Equipment Replacement Funds	
	5.1 When was the Equipment Replacement Fund last reviewed and/or revised? Year:	
	○ 1-2 years ago (0 points) ○ 3 or more years ago (20 points) ○ Not Applicable Explain:	
	5.2 What amount is in your Replacement Fund? **Equipment Replacement Fund Activity**	
	5.2.1 Ending Balance Reported on Last Year's CMAR: $ 5.2.2 *Adjustments* if necessary (e.g., earned interest, audit correction, withdrawal of excess funds, increase making up previous shortfall, etc.) $ **5.2.3 Adjusted January 1st Beginning Balance** $ 5.2.4 *Additions* to Fund (e.g., portion of User Fee, earned interest, etc.) + $	

COMPLIANCE MAINTENANCE ANNUAL REPORT

Facility Name:	Last Updated:	Reporting Year:

Financial Management (Continued)

	5.2.5 *Subtractions* from Fund (e.g., equipment replacement, major repairs - use description box 5.2.5.1 below*.) - $ 5.2.6 **Ending Balance as of December 31st for CMAR Reporting Year** $ (All Sources: This ending balance should include all Equipment Replacement Funds whether held in a bank account(s), certificate(s) of deposit, etc.) *5.2.5.1. Indicate adjustments, equipment purchases and/or major repairs from 5.2.5 above	
	5.3 What amount <u>should</u> be in your replacement fund? $ (If you had a CWFP loan, this amount was originally based on the Financial Assistance Agreement (FAA) and should be regularly updated as needed. Further calculation instructions and an example can be found by clicking the HELP option button.)	
	5.3.1 Is the Dec. 31 Ending Balance in your Replacement Fund above (#5.2.6) equal to or greater than the amount that should be in it(#5.3)? ○ Yes ○ No Explain:	
6.	Future Planning	
	6.1 During the next ten years, will you be involved in formal planning for upgrading, rehabilitating or new construction of your treatment facility or collection system? ○ Yes (If yes, please provide major project information, if not already listed below) ○ No Project Description / Estimated Cost / Approximate Construction Year	
7.	Financial Management General Comments:	

Total Points Generated	
Score (100 - Total Points Generated)	
Section Grade	

COMPLIANCE MAINTENANCE ANNUAL REPORT

Facility Name:	Last Updated:	Reporting Year:

Sanitary Sewer Collection Systems

	Questions	Points
1.	Do you have a Capacity, Management, Operation & Maintenance(CMOM) requirement in your WPDES permit?	
	○ Yes ○ No	
2.	Did you have a documented (written records/files, computer files, video tapes, etc.) sanitary sewer collection system operation & maintenance or CMOM program last calendar year?	
	○ Yes (go to question 3) ○ No (30 points) (go to question 4)	
3.	Check the elements listed below that are included in your Operation and Maintenance (O&M) or CMOM program.:	
	☐ **Goals**: specific identification of major goals of your O&M/CMOM program such as I/I reduction, basement backup and SSO reductions, repair and rehabilitation of sewers, system cleaning and monitoring, etc. ☐ **Organization**: identification of those managers and persons who are responsible for implementing your O&M/CMOM program and reporting sanitary sewer overflows ☐ **Legal Authority**: sufficient authority, through sewer use ordinances, service agreements or other legally binding documents to control infiltration/inflow sources, proper design, construction, inspection and testing of new and rehabilitated sewers and laterals and address flows from satellite collection systems, if present. ☐ **Maintenance Activities**: routine preventative O&M activities, including adequate maintenance of facilities and equipment. By the use of: sewer system monitoring; inspections; a system to identify infiltration/inflow sources (including private property); a system for replacement part inventories; control of fat, oil & grease; employee training program; and a management system for the collection and use of information to establish O&M priorities ☐ **Design and Performance Standards**: establish requirements and standards for design, installation and inspection of new sewers, service laterals, pump stations and sewer rehabilitation projects. ☐ **Overflow Emergency Response Plan**: documented procedures for responding to SSOs, power outages, lift station failures sewer blockages or any other similar events of an emergency nature. ☐ **Capacity Assurance**: a program to assess the current capacity of the collection system to identify problems or bottlenecks ; and if required, a System Evaluation and Capacity Assurance Plan (SECAP). ☐ **Annual Self-Auditing of your O&M/CMOM Program** to ensure above components are being implemented, evaluated, and re-prioritized as needed. ☐ **Special Studies (if applicable)**: any special studies undertaken such as I/I Analysis, Sewer System Evaluation Surveys (SSES), | or sewer pipe studies. Please list the study reports of the last year below: ☐

COMPLIANCE MAINTENANCE ANNUAL REPORT

Facility Name:	Last Updated:	Reporting Year:

Sanitary Sewer Collection Systems (Continued)

4.	Did your sanitary sewer collection system maintenance program include the following maintenance activities? Complete all that apply and indicate the amount maintained:	
	Cleaning [ ] % of system/year Root Removal [ ] % of system/year Flow Monitoring [ ] % of system/year Smoke Testing [ ] % of system/year Sewer Line Televising [ ] % of system/year Manhole Inspections [ ] % of system/year Lift Station O&M [ ] # per L.S/year Manhole Rehabilitation [ ] % of manholes rehabed Mainline Rehabilitation [ ] % of sewer lines rehabed Private Sewer Inspections [ ] % of system/year Private Sewer I/I Removal [ ] % of private services Please include additional comments about your sanitary sewer collection system below: [ ]	
5.	Provide the following collection system and flow information for the past year:	0
	[ ] Total Actual Amount of Precipitation Last Year [ ] Annual Average Precipitation (for your location) [ ] Miles of Sanitary Sewer	

COMPLIANCE MAINTENANCE ANNUAL REPORT

Facility Name:	Last Updated:	Reporting Year:

Sanitary Sewer Collection Systems (Continued)

	☐ Number of Lift Stations ☐ Number of Lift Station Failure ☐ Number of Sewer Pipe Failures ☐ Number of Sanitary Sewer OverFlow (SSO) Occurrences:(10 points per occurrence) ☐ Number of Basement Backup Occurrences ☐ Number of Complaints ☐ Average Daily Flow in MGD ☐ Peak Monthly Flow in MGD(if available) ☐ Peak Hourly Flow in MGD(if available) **PERFORMANCE INDICATORS** ☐ Lift Station Failures(failures/ps/year) ☐ Sewer Pipe Failures(pipe failures/sewer mile/yr) ☐ Sanitary Sewer Overflows (number/sewer mile/yr) ☐ Basement Backups(number/sewer mile) ☐ Complaints (number/sewer mile) ☐ Peaking Factor Ratio (Peak Monthly:Annual Daily Average) ☐ Peaking Factor Ratio(Peak Hourly:Annual daily Average)	
6.	Was infiltration/inflow(I/I) significant in your community last year?	
	○ Yes ○ No If Yes, please describe: ☐	
7.	Has infiltration/inflow and resultant high flows affected performance or created problems in your collection system, lift stations, or treatment plant at any time in the past year?	

COMPLIANCE MAINTENANCE ANNUAL REPORT

Facility Name:	Last Updated:	Reporting Year:

Sanitary Sewer Collection Systems (Continued)

	○ Yes ○ No If Yes, please describe:	
8.	Explain any infiltration/inflow(I/I) changes this year from previous years?	
9.	What is being done to address infiltration/inflow in your collection system?	

Total Points Generated	
Score (100 - Total Points Generated)	
Section Grade	

COMPLIANCE MAINTENANCE ANNUAL REPORT

Facility Name:	Last Updated:	Reporting Year:

WPDES No.

GRADING SUMMARY				
SECTION	LETTER GRADE	GRADE POINTS	WEIGHTING FACTORS	SECTION POINTS
Influent Loadings		0.0	3	0
Effluent Quality:BOD		0.0	10	0
Effluent Quality:TSS		0.0	5	0
Effluent Quality:Ammonia		0.0	5	0
Effluent Quality:P		0.0	3	0
Effluent Quality:N		0.0	7	0
Groundwater Quality		0.0	7	0
Pond/Lagoons		0.0	7	0
Biosolids Mgt.		0.0	5	0
Prev.Maintenance.Staffing		0.0	1	0
Operator Certification		0.0	1	0
Financial Management		0.0	1	0
Collection Systems		0.0	3	0
TOTALS				
GRADE POINT AVERAGE(GPA)=				

Notes:

A = Voluntary Range
B = Voluntary Range
C = Recommendation Range (Response Required)
D = Action Range (Response Required)
F = Action Range (Response Required)

COMPLIANCE MAINTENANCE ANNUAL REPORT

Facility Name:	Last Updated:	Reporting Year:

Resolution or Owner's Statement

NAME OF GOVERNING BODY OR OWNER	DATE OF RESOLUTION OR ACTION TAKEN
RESOLUTION NUMBER	
ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO SPECIFIC CMAR SECTIONS (Optional for grade A or B, required for grade C, D, or F):	
Influent Flow and Loadings: Grade=	
Effluent Quality: BOD: Grade=	
Effluent Quality: TSS: Grade=	
Effluent Quality: Ammonia: Grade=	
Effluent Quality: Phosphorus: Grade=	
Effluent Quality: Total N: Grade=	
Groundwater: Grade=	
Ponds: Grade=	
Biosolids Quality and Management: Grade=	
Staffing: Grade=	
Operator Certification: Grade=	
Financial Management: Grade=	
Collection Systems: Grade=	
ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO THE OVERALL GRADE POINT AVERAGE AND ANY GENERAL COMMENTS (Optional for G.P.A. greater than or equal to 3.00, required for G.P.A. less than 3.00) G.P.A. =	

Appendix C

MMSD I/I Management
Annual Progress Report Template

MILWAUKEE METROPOLITAN SEWERAGE DISTRICT

Preserving The Environment • Improving Water Quality

SEPARATE SEWER AREA
INFILTRATION AND INFLOW MANAGEMENT
ANNUAL PROGRESS REPORT

FOR THE PERIOD COVERING
JANUARY 1, 2005 THROUGH DECEMBER 31, 2005

MUNICIPALITY: _____

SUBMITTED BY: _____

TITLE OF SUBMITTOR: ____

DATE DUE: **March1, 2006**

DATE SUBMITTED: ____

A) Sanitary Manhole Inventory

(Include all manholes existing as of the end of 2008)

Comm 81.01(212)

(212) "Sanitary sewer" means a pipe that carries wastewater consisting in part of domestic wastewater.

Comm 81.01(149)

(149) "Manhole" means an opening constructed to permit access by a person to a sewer or any underground portion of a plumbing system.

Comm 81.01(198)

(198) "Public sewer" means a sewer owned and controlled by a public authority.

Table A1: Public Sanitary Manhole Inventory

Basin ID	Number in Basin	Number in Basin w/ Vented Covers	Number in Basin w/o Gaskets

Comm 81.01(193)

(193) "Private interceptor main sewer" means a sewer serving 2 or more buildings and not part of the municipal sewer system.

Table A2: Private Sanitary Manhole Inventory

Basin ID	Number in Basin	Number in Basin w/ Vented Covers	Number in Basin w/o Gaskets

B) Sanitary Manhole Inspection

(Include only manholes inspected in 2009)

Comm 81.01(149)

(149) "Manhole" means an opening constructed to permit access by a person to a sewer or any underground portion of a plumbing system.

Comm 81.01(212)

(212) "Sanitary sewer" means a pipe that carries wastewater consisting in part of domestic wastewater.

Comm 81.01(198)

(198) "Public sewer" means a sewer owned and controlled by a public authority.

Table B1: Public Sanitary Manhole Inspection in 2005

Basin ID	Number of Manholes Inspected	Number Identified for Repair or Replacement	Number of Manholes with Defects Found On: VC = Vented Covers / CS =Chimney Seals / G = Gaskets / O = Other							
			Identified				Performed			
			VC	CS	G	O	VC	CS	G	O

Comm 81.01(193)

(193) "Private interceptor main sewer" means a sewer serving 2 or more buildings and not part of the municipal sewer system.

Table B2: Private Sanitary Manhole Inspection in 2005

Basin ID	Number of Manholes Inspected	Number Identified for Repair or Replacement	Number of Manholes with Defects Found On: VC = Vented Covers / CS =Chimney Seals / G = Gaskets / O = Other							
			Identified				Performed			
			VC	CS	G	O	VC	CS	G	O

C) Sanitary Sewer Inspection and Rehabilitation (Including Relays)

Comm 81.01(212)
(212) "Sanitary sewer" means a pipe that carries wastewater consisting in part of domestic wastewater.

Comm 81.01(198)
(198) "Public sewer" means a sewer owned and controlled by a public authority.

Table C1: Public Sanitary Sewer Inspection and Rehabilitation (Including Relays) in 2005

Basin ID	Lineal Feet Inspected	Lineal Feet with Defects Identified for Rehabilitation	Rehabilitation by Lineal Feet			
			Performed		Scheduled	
			Rehabbed	Relayed	Rehabbed	Relayed

Comm 81.01(193)
(193) "Private interceptor main sewer" means a sewer serving 2 or more buildings and not part of the municipal sewer system.

Table C2: Private Sanitary Sewer Inspection and Rehabilitation (Including Relays) in 2005

Basin ID	Lineal Feet Inspected	Lineal Feet with Defects Identified for Rehabilitation	Rehabilitation by Lineal Feet			
			Performed		Scheduled	
			Rehabbed	Relayed	Rehabbed	Relayed

D) Private Building Sewer Inspection and Rehabilitation

Comm 81.01(44)

(44) "Building sewer" means that part of the drain system not within or under a building which conveys its discharge to a public sewer, private interceptor main sewer, private onsite wastewater treatment system or other point of discharge or dispersal.

Table D: Private Building Sewer Inspection and Rehabilitation in 2005

Basin ID	Inspected		Identified for Rehabilitation		Rehabilitation by Lineal Feet			
					Rehabbed		Relayed	
	Number	Lineal Feet	Number	Lineal Feet	Number	Lineal Feet	Number	Lineal Feet

E) Investigations Conducted to Identify and Eliminate Illegal Connections, (e.g. sump pump and downspout)

Comm 81.01(249)

(249) "Sump pump" means an automatic device located in a sump, pit or low point that is designed to elevate storm water, groundwater or clear water.

Comm 81.01 - ANNOT.
Note: Downspout, see "leader".

Comm 81.01(140)
(140) "Leader" means a pipe or channel outside a building which conveys storm water from the roof or gutter drains to a storm drain, storm sewer or to grade.

Table E: Investigations Conducted to Identify and Eliminate Illegal Connections, i.e. Sump Pump and Downspout in 2005

Basin ID	Type of Investigation	Date(s) of Investigation	Date(s) of Disconnection	Comments

F) Other Investigations (e.g. flow monitoring and smoke testing)

Table F: Other Investigations in 2005			
Basin ID	**Type of Investigation**	**Date(s) of Investigation**	**Comments**

G) Costs Involved with Inspection and Rehabilitation

Table G: Costs Involved with Inspection and Rehabilitation in 2005				
Type	**Associated Table**	**Inspection Costs**	**Rehabilitation Costs**	**Total Costs**
Public Manhole	**B1**	$	$	$
Private Manhole	**B2**	$	$	$
Public Sewer	**C1**	$	$	$
Private Sewer	**C2**	$	$	$
Private Building Sewer	**D**	$	$	$
Illegal Connection	**E**	$	$	$
Other	**F**	$	$	$
11.1 Total Cost		$	$	$

H) Other Comments

About AECOM
AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental and energy. With more than 40,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments.

AECOM
1020 N. Broadway, Suite 400
Milwaukee, Wisconsin 53202
T 414.225.5100
F 414.225.5111
www.aecom.com